

this opinion. He declares himself also against the opinion which derives all the parts of the stem from a single layer of cambium existing in the terminal bud. According to him, the entire terminal bud is formed of cambium, and already contains the mother cells of all the kinds of tissue which will subsequently form the various parts of the stem.—*Jahrb. für Wiss. Bot.* 1864; *Bibl. Univ.* 1865, *Bull. Sci.* p. 87.

*Graduation from "Individual Peculiarities" to Species in Insects.*

The following are the concluding paragraphs of a paper by Dr. B. D. Walsh "*On Phytophagic Varieties and Phytophagic Species.*" The name *phytophagic* is given to those otherwise identical insects which differ, as varieties or species, according to the species of plant they feed upon. "When certain unimportant characters in the insect are correlated with the food-plant, while at the same time there is no sufficient reason to doubt that the two varieties freely intercross," the forms are called *phytophagic varieties*. When, from the lack of intermediate forms, intercrossing may be inferred not to take place, they are called *phytophagic species*. Dr. Walsh sums up his conclusions thus:—

"From the facts referred to above, and those recorded by me elsewhere, we may construct the following almost unbroken series, from the first dawnings of the Phytophagic Variety to the full development of the Phytophagic Species:—

"1st. Difference of food, even when the food-plant belongs to widely distinct botanical families, is accompanied by no difference whatever either in the larva, pupa, or imago state: *Attacus Cecropia*, Linn.; *Dryocampa imperialis*, Drury; *Lachnus Caryæ*, Harris (*Proc. Ent. Soc. Phil.* vol. i. p. 303); and hundreds of other species.

"2nd. Difference of food is accompanied by a marked difference in the colour of the silk-producing secretions: *Bombyx Mori*, Linn., the common silkworm.

"3rd. Difference of food is accompanied by a tendency toward the obliteration of the normal dark markings in the imago: *Haltica alternata*, Illig.

"4th. Difference of food is accompanied by marked, but not perfectly constant, colorational differences in the larva, but none whatever in the ♂ ♀ imago: *Datana Ministra*, Drury.

"5th. Difference of food is accompanied by a marked and perfectly constant difference in the size of the imago: *Chrysomela scalaris*, Lec.

"6th. Difference of food is accompanied by a marked difference in the chemical properties of gall-producing secretions, the external characters of the ♂ ♀ imago remaining identical: *Cynips q. spongifica*, O. S., and *C. q. inanis*, O. S.

"7th. Difference of food is accompanied by a slight but constant change in the coloration of the abdomen of the ♂ ♀ imago, and by a very slight change in the chemical properties of the gall-producing secretions, the galls of the two insects, though typically somewhat distinct, being connected by intermediate grades in the case of the latter: *Cynips q. punctata*, Basset, and *C. q. Podagræ*, Walsh.

"8th. Difference of food is accompanied by one marked and perfectly constant colorational difference, and others which are not perfectly constant, in the larva, but none whatever in the ♂ ♀ imago: *Halesidota tessellaris*, Sm. Abb., and *H. Antiphola*, Walsh.

"9th. Difference of food is accompanied by several slight but constant structural differences in the ♂ imago, but none whatever in the ♀ imago: *Clytus Robinæ*, Forst., and *Cl. pictus*, Drury.

"10th. Difference of food is accompanied by a slight but constant structural difference in both ♂ and ♀ imago: 1. *Tingis Tiliæ*, n. sp., and *T. amorphæ*, n. sp.; 2 (doubtful). *Diapheromera femorata*, Say, and *D. Veliæ*, n. sp.

"11th (doubtful). Difference of food is accompanied by very strong structural and colorational differences in the larva and in all probability by a constant structural difference of generic value in the ♀ imago, the ♂ imagos being to all external appearances identical, and the two insects belonging to different genera: *Sphingicampa distigma* ♂ ♀, Walsh, and *Dryocampa bicolor* ♂, Harris.

"12th. Difference of food is accompanied by marked and constant differences, either colorational or structural, or both, in the larva, pupa, and imago states: *Halesidota tessellaris*, Sm. Abb., and *H. Caryæ*, Harris, and hundreds of species belonging to the same genus, and commonly considered as distinct species.

"The constitution of the human mind is such, that the same evidence carries with it very different degrees of weight when presented to different intellects. Others will no doubt draw different conclusions from the facts catalogued above; but for my own part, as on the most careful consideration I am unable to draw any definite line in the above series, and to say with certainty that here end the Varieties and here begin the Species, I am therefore irresistibly led to believe that the former gradually strengthen and become developed into the latter, and that the difference between them is merely one of mode and degree."—Silliman's *American Journal*, September 1865.

*Note on the Cultivation of Eels.* By M. L. SOUBEIRAN.

The author states that for several years past considerable quantities of young eels have been taken at the mouths of the French rivers and distributed in the inland waters; but he adds that, from his own experience, this course is not always judicious, and is frequently unprofitable. He mentions that in 1856 certain landed proprietors in the neighbourhood of Caen transported great quantities of young eels to the ponds and other waters on their estates, and after feeding them at great expense obtained nothing but loss from their undertaking, the produce being only 150 francs against an expenditure of 2220 francs. Besides this, the waters into which the eels were introduced, and those into which they subsequently penetrated, were entirely depopulated of other species of fish; so that the multiplication of eels must be regarded as in every respect a losing speculation.—*Comptes Rendus*, 4th September, 1865, p. 424.